

99 F.3d 1568  
40 U.S.P.Q.2d 1619  
(Cite as: 99 F.3d 1568)

United States Court of Appeals,  
Federal Circuit.

YORK PRODUCTS, INC., Plaintiff-Appellant,  
v.  
CENTRAL TRACTOR FARM & FAMILY  
CENTER and Custom Form Manufacturing, Inc.,  
Defendants-Appellees.

No. 96-1002.

Nov. 1, 1996.

Patentee brought action against competitor, alleging infringement of its patent for a protective vehicle cargo bed liner. The United States District Court for the Western District of Pennsylvania, Francis X. Caiazza, United States Magistrate Judge, entered judgment as matter of law (JMOL) in favor of competitor, and patentee appealed. The Court of Appeals, Rader, Circuit Judge, held that: (1) patentee did not waive its opportunity to challenge JMOL on appeal by requesting competitor to renew its JMOL motion; (2) claim in patent describing ridge members forming load locks in sidewalls with depth "sufficient to anchor the structure" did not require ridge members to extend from near bottom of sidewall to near top of sidewall; and (3) claim requiring "plurality" of "gaps" or "pockets" in liner's sidewalls did not require more than three gaps or pockets in each sidewall.

Affirmed in part, reversed and remanded in part.

#### West Headnotes

[1] Federal Courts ⚡764  
170Bk764 Most Cited Cases

Court of Appeals gives grant of judgment as matter of law (JMOL) under rule governing such judgments plenary review on appeal. Fed.Rules Civ.Proc.Rule 50(a), 28 U.S.C.A.

[2] Patents ⚡324.1  
291k324.1 Most Cited Cases

Patentee did not waive its opportunity to challenge on appeal judgment as matter of law (JMOL) entered in infringement case when it requested alleged infringer to renew its JMOL motion, where patentee reserved its

objections and clearly presented issues to trial court, then consented to entry of JMOL to expedite its appeal and to conserve resources. Fed.Rules Civ.Proc.Rule 50(a), 28 U.S.C.A.

[3] Patents ⚡101(1)  
291k101(1) Most Cited Cases

Patent claim language defines bounds of claim scope.

[4] Patents ⚡167(1)  
291k167(1) Most Cited Cases

[4] Patents ⚡168(1)  
291k168(1) Most Cited Cases

To determine meaning of disputed patent claim terms, construing court may consider other sources, including patent specification and administrative record leading to patent issuance.

[5] Patents ⚡101(2)  
291k101(2) Most Cited Cases

Claim in patent for vehicle cargo bed liner requiring sidewall ridges to extend "a substantial part of the entire height thereof" required that the ridges cover nearly entire height of sidewall portion of invention.

[6] Patents ⚡101(2)  
291k101(2) Most Cited Cases

Without express intent to impart novel meaning to patent claim terms, inventor's claim terms take on their ordinary meaning.

[7] Patents ⚡101(4)  
291k101(4) Most Cited Cases

Scope of patent claims is not necessarily limited to specific embodiments described in specification.

[8] Patents ⚡101(2)  
291k101(2) Most Cited Cases

Claim in patent for protective cargo bed liner, describing ridge members forming load locks in sidewalls with depth "sufficient to anchor the structure" did not require ridge members to extend from near bottom of sidewall to near top of sidewall. 35 U.S.C.A. § 112.

**[9] Patents ↪101(8)**  
**291k101(8) Most Cited Cases**

In determining whether to apply statutory procedures for construing means-plus-function claims, use of word "means" triggers presumption that inventor used term advisedly to invoke statutory mandates for means-plus-function clauses; nonetheless, mere incantation of word "means" in clause reciting predominantly structure cannot evoke provision. 35 U.S.C.A. § 112.

**[10] Patents ↪101(8)**  
**291k101(8) Most Cited Cases**

Use of word "means" in patent claim for a vehicle cargo bed protective liner did not require statutory means-plus-function analysis when construing claim, where claim did not state function. 35 U.S.C.A. § 112.

**[11] Patents ↪312(2)**  
**291k312(2) Most Cited Cases**

In literal infringement analysis, prosecution history is relevant to patent claim coverage.

**[12] Patents ↪168(2.1)**  
**291k168(2.1) Most Cited Cases**

Unless altering claim language to escape examiner rejection, patent applicant only limits claims during prosecution by clearly disavowing claim language.

**[13] Patents ↪101(2)**  
**291k101(2) Most Cited Cases**

Claim in patent for protective vehicle cargo bed liner, requiring "plurality" of "gaps" or "pockets" in liner's sidewalls, did not require more than three gaps or pockets in each sidewall; term required only at least two ridge members on each sidewall to form load lock.

**Patents ↪328(1)**  
**291k328(1) Most Cited Cases**

958,876. Cited.

\*1569 Raymond G. Hasley, Rose, Schmidt, Hasley & DiSalle, P.C., Pittsburgh, PA, argued, for plaintiff-appellant. With him on the brief was Brian W. Ashbaugh.

David R. Melton, Barnes & Thornburg, South Bend, IN, argued, for defendants-appellees. With him on the brief was Paul B. Hunt.

Before RADER, Circuit Judge, SKELTON, Senior Circuit Judge, and BRYSON, Circuit Judge.

RADER, Circuit Judge.

The United States District Court for the Western District of Pennsylvania granted a motion for judgment as a matter of law (JMOL) in favor of Central Tractor Farm & Family Center (Central Tractor) and Custom Form Manufacturing, Inc. (Custom Form). York Products, Inc. (York) appeals. Because the claim language dictates the trial court's interpretation, this court affirms its interpretation of claim 1. Because claim 32 differs from claim 1, however, this court reverses the trial court's interpretation of claim 32 and the term "plurality." Accordingly, this result requires a remand for findings on infringement.

I.

York owns U.S. Patent No. 4,958,876 (the '876 patent) entitled "Vehicle Cargo Bed Liner." The patent claims a protective liner for a vehicle cargo body, such as the bed of a pickup truck. This liner fits inside the cargo bed of a vehicle and prevents damage from a shifting load. The sidewalls of the claimed liner include protective ridges. These ridges align on opposite sides of the liner to create slots into which a user may insert a wooden board to lock a load into place. As disclosed in the patent, this load lock feature prevents cargo from shifting during transit. Figures 2 and 7 from the '876 patent illustrate this load lock feature:

\*1570

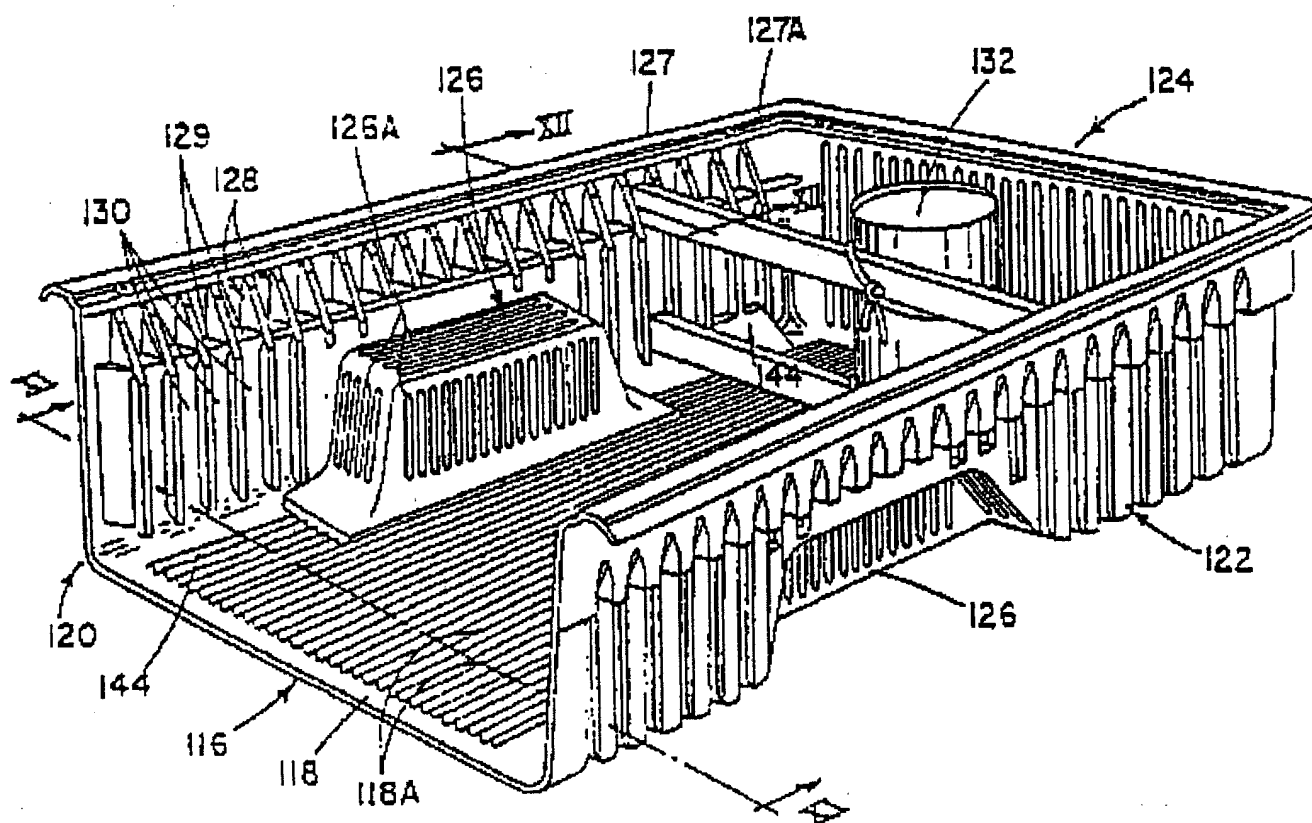
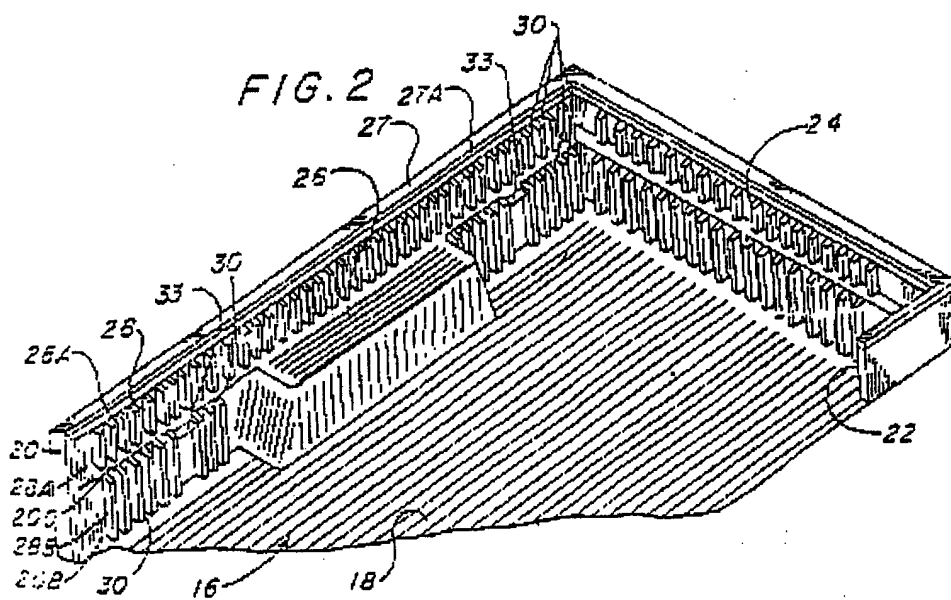


FIG. 7

Central Tractor allegedly infringed the '876 patent by selling bed liner products. Custom Form manufactured the accused products. In the litigation, Custom Form

defended Central Tractor.

York alleges that Custom Form infringed claims 1-8,

15, 16, 19-25, 30-33, 35, and 36 of the '876 patent. Custom Form manufactures two models of bed liners for use in the cargo body of pickup trucks: an under-the-rail type \*1571 and an over-the-rail type. The rail is a structure at the top of the wall of a pickup truck cargo bed. The upper edge of the liner sidewalls either fits under the rail or extend over the top of the rail. Custom Form's under-the-rail model has two distinct means to separate and restrain cargo; its over-the-rail model has only one. York alleges each type of bed liner infringes claims of the '876 patent.

Before trial, the parties requested that the trial court issue jury instructions on claim interpretation. Both parties submitted proposed interpretations. The trial court denied this request. Instead, the trial court elected to select a jury and proceed with the trial. When York had closed its case for infringement, Custom Form moved for JMOL under Fed.R.Civ.P. 50(a). The trial court denied the motion. Custom Form thus began its case-in-chief.

After the trial had been underway about a week, the trial court distributed draft jury instructions which interpreted the claims. These draft instructions adopted many of the proposed interpretations Custom Form had submitted before trial. York moved to present oral argument on those instructions. The trial court granted the motion and sequestered the jury. After oral argument, the trial court declined to modify its draft instructions. York entered a formal objection to the proposed form of the jury instructions. Based on its perception that the court's proposed jury instructions precluded a finding of infringement, York also requested that the trial court reconsider and grant Custom Form's earlier JMOL motion. The district court accordingly granted Custom Form's renewed motion for JMOL. York appeals.

## II.

[1][2] This court gives a grant of JMOL under Rule 50(a) plenary review on appeal. Allied Colloids, Inc. v. American Cyanamid Co., 64 F.3d 1570, 1573 (Fed.Cir.1995). As an initial matter, this case asks whether York, because it requested Custom Form to renew its JMOL motion, waived its opportunity to challenge the JMOL on appeal. A party that does not timely object to errors or does not raise issues at trial risks waiver of appeal rights. See Charles Alan Wright & Arthur R. Miller, 9A *Federal Practice & Procedure* §§ 2472 & 2533 n. 16 (2d ed. 1995) (failure to object to the lack of grounds in the trial court may prohibit raising point in the appellate court). York, however, does not fit this profile. York explicitly objected to the trial court's claim interpretation on numerous grounds.

Instead, after reserving its objections and clearly presenting the issues to the trial court, York consented to entry of JMOL to expedite its appeal and to conserve both its client's and the court's resources. Because it expressly raised and reserved objections on the claim interpretation issues on appeal, York has not waived its rights. To the contrary, York has proceeded responsibly to avoid needless expenditure of the resources of the parties and the court.

This court's sister circuit undertook a similar action in Deas v. PACCAR, Inc., 775 F.2d 1498 (11th Cir.1985).

In that case, after a full trial, the jury found for Deas. In response, Paccar moved for judgment notwithstanding the verdict (JNOV) or, in the alternative, a new trial. The trial court denied Paccar's motion for JNOV but granted the motion for a new trial. Because the grant of a new trial is an interlocutory order, Deas then requested that Paccar's JNOV motion be granted in order to allow an immediate appeal. The Eleventh Circuit found support for reviewing the motion, even though Deas had consented to the court's order. "The plaintiffs did not consent to a judgment against them, but only that, if there was to be such a judgment, it should be final in form instead of interlocutory, so that they might come to this court without further delay." Id. at 1503 (quoting Thomsen v. Cayser, 243 U.S. 66, 83, 37 S.Ct. 353, 358, 61 L.Ed. 597 (1917)); see also National Polymer Products, Inc. v. Borg-Warner Corp., 660 F.2d 171, 177 (6th Cir.1981) (allowing parties to consent to JNOV in order to obtain immediate review). In Deas, however, the court noted that while an appellant may "consent to the grant of JNOV as a vehicle" to reach appeal, the court would only review the trial court's ruling initially adverse to Deas, i.e., the grant of Paccar's motion for a new trial. 775 F.2d at 1503. The court proceeded to review for clear error the trial court's granting of the motion for a new trial. Id. This \*1572 review stands in contrast to the *de novo* review to which a motion for JNOV is normally subjected. In this case, we review the district court's action under the standard of review dictated by the Supreme Court in Markman. Markman v. Westview Instruments, Inc., 517 U.S. 370, 116 S.Ct. 1384, 134 L.Ed.2d 577 (1996).

## III.

[3][4] Because the parties dispute the meaning of terms in the claims of the patent, this court reviews the district court's order under the requirements of Markman. Id. The claim language, of course, defines the bounds of claim scope. Bell Communications Research, Inc. v. Vitalink Communications Corp., 55 F.3d 615, 619-20, 34 USPQ2d 1816, 1819 (Fed.Cir.1995) ("First, and most importantly, the language of the claim defines the

scope of the protected invention."). To determine the meaning of disputed claim terms, however, a construing court may consider other sources, including the patent specification and the administrative record leading to patent issuance. Whittaker Corp. v. UNR Indus., Inc., 911 F.2d 709, 711, 15 USPQ2d 1742, 1744 (Fed.Cir.1990). These additional sources may provide context and clarification about the meaning of claim terms.

[5] Claim 1 states as follows:

A protective liner for a vehicle cargo bed, said protective liner permitting structure positioned in the vehicle cargo bed to be supported and affixed in position in the cargo bed, said liner comprising:  
 a liner floor portion positionable upon the floor of the vehicle cargo bed, said liner floor portion having elevated portions formed thereupon to conform to wheel wells protruding from the vehicle cargo bed floor;  
 liner sidewall portions extending upwardly from opposite sides of the liner floor portion, one of each of said liner sidewall portions being positionable against one of a pair of opposite sidewalls of the vehicle cargo bed;  
 a liner frontwall portion extending upwardly from a front end of the liner floor portion, said liner frontwall portion being positionable against a frontwall of the vehicle cargo bed; and  
 a plurality of spaced apart, vertically extend[ing] *ridge members protruding in a common plan[e] from the liner sidewall portions for at least a substantial [ ] part of the entire height thereof* whereby gaps separating adjacent ones of the ridge members of each liner sidewall portion form cooperative opposed load locks of a depth sufficient to receive opposite ends of the structure positioned in the vehicle cargo bed in order to affix the structure against movement in a direction parallel to said liner sidewall portion in the vehicle cargo bed.

(Emphasis added.)

In its claim interpretation, the district court defined the limitation "at least a substantial part of the entire height thereof" to mean "the ridge member must protrude from each of the sidewalls of the bed liner and must extend from near the bottom to near the top of the liner sidewall." In addition, the district court stated:

"Substantially the entire height thereof" simply means that the ridges must cover nearly the entire length of the sidewall. This limitation in the Claim was added by the patent applicant during prosecution of the patent, as was the case for the words: "vertically extending." A projection in the sidewall that does not span nearly the entire distance from the top to the

bottom of the sidewall does not meet this limitation.

[6] The claim language itself shows the accuracy of the district court's interpretation. Without an express intent to impart a novel meaning to claim terms, an inventor's claim terms take on their ordinary meaning. Hoganas AB v. Dresser Indus., Inc., 9 F.3d 948, 951, 28 USPQ2d 1936, 1938 (Fed.Cir.1993); SmithKline Diagnostics, Inc. v. Helena Lab. Corp., 859 F.2d 878, 882, 8 USPQ2d 1468, 1471 (Fed.Cir.1988); ZMI Corp. v. Cardiac Resuscitator Corp., 844 F.2d 1576, 1579, 6 USPQ2d 1557, 1560 (Fed.Cir.1988). In this case, the patent discloses no novel uses of claim words. Ordinarily, therefore, "substantially" means "considerable in ... extent," \*1573 American Heritage Dictionary Second College Edition 1213 (2d ed. 1982), or "largely but not wholly that which is specified," Webster's Ninth New Collegiate Dictionary 1176 (9th ed. 1983). Thus, the modifier "substantially" conveys that the ridge members extend over most of the "entire height" of the sidewall portions. The district court's language captured well this meaning: "[T]he ridge member ... must extend from near the bottom to near the top of the liner sidewall."

"Substantial" in this context does not mean ample extension to accomplish the purpose of locking loads. The language "substantial part" expressly modifies the term "entire height." "Entire height," in turn, refers (via the antecedent marker "thereof") to "liner sidewall portions." Therefore, the claim language explicitly ties "substantial part" to the height of the sidewalls, not to the overall function of the invention. The language and syntax of the claim preclude a functional definition of "substantial part." In other words, if "substantial part" meant only ample height to accomplish a purpose, the claim would need to read "only so much height as necessary to affix a structure against movement." This redraft would essentially strip many words in the claim of their meaning.

The claim term "portions" also does not limit the "entire height" limitation to something less than the full height of the sidewalls. The context of the claim shows that the inventor used the term "liner sidewall portions" to distinguish the sidewalls from other portions of the overall invention such as the "liner floor portion" or "the liner frontwall portion." In context, the word "portion" does not refer to a part of the liner sidewall, but to the sidewall itself as a portion of the entire bed liner.

[7] The specification also supports the district court's reading of this claim language. The embodiments disclosed in the '876 patent and its drawings show ridge members extending nearly the entire height of the

sidewall. At no point does the specification suggest that "at least a substantial part of the entire height [of the sidewall]" means less than the entire height of the sidewall. Moreover, the specification uniformly uses the term "portion" to distinguish features of the invention from each other, not to refer to less than the entire feature. Even the reference at column 4, line 52, ("Sidewall *portions* 20 and 22 further contain rail overlay *portions* 27 containing notched parts 27A.") (emphasis added), identifies a feature, rather than limiting the feature's reach. Although the scope of the claims is not necessarily limited to the specific embodiments described in the specification, Amhil Enters. Ltd. v. Wawa, Inc., 81 F.3d 1554, 1559, 38 USPQ2d 1471, 1474 (Fed.Cir.1996), the specification of the '876 patent does not provide any indication that the claim terms should be given anything other than their ordinary meaning. See North Am. Vaccine, Inc. v. American Cyanamid Co., 7 F.3d 1571, 1576, 28 USPQ2d 1333, 1337 (Fed.Cir.1993).

In sum, the district court correctly construed the phrase "a substantial part of the entire height thereof." The limitation requires that the ridges must cover nearly the entire height of the sidewall portion of the invention.

#### IV.

[8] Unlike claim 1, however, claim 32 does not explicitly limit the height of the ridge members forming the load locks in the sidewalls. Instead, claim 32 describes the load lock in terms of depth:

32. A protective liner for a cargo bed of a vehicle, said protective liner allowing a structure positioned in the trunk cargo bed to be supported and affixed in position in the vehicle cargo bed, including:  
a liner floor portion having elevated portions formed thereupon to conform to wheel wells protruding from the cargo bed floor;  
upwardly extending liner sidewall portions extending upwardly from opposite sides of the liner floor portion an upwardly extending liner frontwall portion extending upwardly from a front end of the liner floor portion; and  
*means formed on the upwardly extending liner sidewall portions including a plurality of spaced apart, vertically extending ridge members protruding from \*1574 the liner sidewall portions and forming load locks in gaps separating adjacent ones of the ridge members, said load locks having a depth sufficient to anchor a structure positioned and supported in the cargo bed.*

(Emphasis added). Despite the differences between claim 1 and claim 32, the district court interpreted claim 32 to require "the ridge member ... [to] extend from

near the bottom of the sidewall to near the top of the sidewall."

[9] Claim 32 uses language that may implicate the procedures for construing a means-plus-function claim.

In determining whether to apply the statutory procedures of section 112, ¶ 6, the use of the word "means" triggers a presumption that the inventor used this term advisedly to invoke the statutory mandates for means-plus-function clauses. 35 U.S.C. § 112, ¶ 6 (1994); see Greenberg v. Ethicon Endo-Surgery, Inc., 91 F.3d 1580, 1584, 39 USPQ2d 1783, 1787 (Fed.Cir.1996). Nonetheless, mere incantation of the word "means" in a clause reciting predominantly structure cannot evoke section 112, ¶ 6. See, e.g., AMP Inc. v. Fujitsu Microelectronics Inc., 853 F.Supp. 808, 820- 21, 31 USPQ2d 1705, 1712 (M.D.Pa.1994) (despite use of the term "means," claims were not means-plus-function); Waterloo Furniture Components, Ltd. v. Haworth, Inc., 798 F.Supp. 489, 494, 25 USPQ2d 1138, 1142 (N.D.Ill.1992) (holding "that the use of the word 'means' in a claim does not as a matter of law refer to an element expressed in means-plus-function form"). Conversely, "[t]he recitation of some structure in a means plus function element does not preclude the applicability of section 112(6)." Laitram Corp. v. Rexnord, Inc., 939 F.2d 1533, 1536, 19 USPQ2d 1367, 1369 (Fed.Cir.1991).

While the last paragraph of claim 32 begins with the word "means," what follows is a detailed recitation of structure. The clause begins with a description of "means formed on the ... sidewall portions including ... ridge members." This language describes generally, indeed expressly includes, ridge members that serve as anchors for load locks. The clause then refers to "forming load locks," followed by still more structural language about gaps between ridge members and the depth of the load locks ("load locks having a depth sufficient to anchor a structure positioned and supported in the cargo bed").

[10] The claim language, however, does not link the term "means" to a function. In language again suggestive of structure, the claim notes that the "means" "protrud[e] from the liner sidewall portions and form[ ] load locks." This language vaguely hints at the function of anchoring a load in the cargo bed. Nowhere does the claim language following "means" state that function. Instead, the claim recites structure. Without an identified function, the term "means" in this claim cannot invoke 35 U.S.C. § 112, ¶ 6. Without a "means" sufficiently connected to a recited function, the presumption in use of the word "means" does not operate. In any case, the express structural limits of the claim language limit its scope. Thus, this court

construes this claim without reference to section 112, ¶ 6.

Neither the language of claim 32, nor the specification, requires that the ridges extend over the entire height of the sidewalls. The claim language does not include a height limitation. Instead of referring to height, the claim discloses "load locks having sufficient depth." The specification supports this construction. For example, the specification calls for "gaps separating adjacent ones of the ridge members [to] form load locks of a depth sufficient to anchor an end of the structure."

In other words, for this claim, the necessary height of the ridge members depends on the height of the structure to be anchored.

Figure 2 illustrates the height of ridge members necessary to form a load lock. Figure 2 designates a plurality of ridge members above the level of the wheel well as 28A. Similarly, Figure 2 designates the ridge members below the level of the wheel well as 28B. A support member which need not rise above the level of the wheel well might be fully anchored by and between only the 28B ridge members. In other words, a load lock may be formed using only ridge members 28B, which do not extend the entire height of the sidewall. In sum, claim 32 contains no \*1575 limitation analogous to the "substantially" language in claim 1. No limitation in the claim or the specification requires that the ridge members extend any distance beyond that sufficient to form a load lock.

[11][12] The prosecution history also does not require a height limitation in claim 32. In a literal infringement analysis, prosecution history is relevant to claim coverage. See, e.g., *Vitronics Corp. v. Conceptor Inc.*, 90 F.3d 1576, 1582-83, 39 USPQ2d 1573, 1577 (Fed.Cir.1996) ("[T]he record before the Patent and Trademark Office is often of critical significance in determining the meaning of the claims."); *E.I. duPont de Nemours & Co. v. Phillips Petroleum Co.*, 849 F.2d 1430, 7 USPQ2d 1129 (Fed.Cir.1988). Unless altering claim language to escape an examiner rejection, a patent applicant only limits claims during prosecution by clearly disavowing claim coverage. See *Senmed, Inc. v. Richard-Allan Med. Indus., Inc.*, 888 F.2d 815, 820, 12 USPQ2d 1508, 1513 (Fed.Cir.1989) (reversing jury's claim interpretation that is "incontestably inconsistent with the position taken ... during prosecution").

In this case, the inventor's conduct during the administrative process for acquiring a patent did not evince a clear disavowal of claim scope. The art prior to the '876 patent, specifically Rye, U.S. Patent No. 4,767,149, shows a support surface in a truck bed liner

that reaches about two-thirds the height of the sidewall. Although the examiner at first rejected one claim based on Rye, the inventors eventually swore behind that reference to remove it as prior art. Moreover, the file history does not contain a single statement that the inventors conceded any coverage based on Rye. In sum, the administrative record discloses no disavowal of coverage, unmistakable or otherwise, due to Rye. Therefore, the prosecution history does not supply any reason to construe claim 32 to contain a height limitation.

In sum, the language of claim 32, unlike claim 1, contains no height limitation referenced to the height of the sidewall. Instead, claim 32 keys the load lock to the depth "sufficient to anchor the structure." Therefore, the district court erred by reading the height limitation from claim 1 into claim 32.

## V.

[13] The district court also interpreted the term "plurality" in the claims. Although not part of the jury instructions, the trial court issued an order, dated September 22, 1995, construing this term:

As a matter of claim construction, the court defines "plurality" as meaning more than three "gaps" or "pockets" on each of the two sidewalls. The "gaps" or "pockets" are positioned on each sidewall in such a manner so as to allow the first end of a structure to be anchored in a "gap" or "pocket" on one sidewall, and a second end of a structure to be anchored in a "gap" or "pocket" on the opposing sidewall.

(Emphasis in original.)

The district court did not provide reasoning for its conclusion that "plurality" means more than three "gaps" or "pockets" on each sidewall. Moreover, this court detects no support for this conclusion in the plain meaning of the word or any of the public documents, including the patent and the administrative record of its procurement. The term means, simply, "the state of being plural." *American Heritage Dictionary Second College Edition* 955 (2d ed. 1982). Thus, this term requires only at least two ridge members on each sidewall to form a load lock.

There is nothing in the file history that would alter this plain meaning. Rye, which may not qualify as prior art, discloses a bed liner with three recesses. Rye, however, does not disclose sidewall ridges. Instead, Rye secures a load with its recesses. In any event, the '876 patent differs from Rye in many more respects than simply having more than three "gaps" or "pockets." Furthermore, the administrative record does not

disclose that the '876 inventors took any steps to distinguish the Rye reference other than to swear behind it. In sum, the mere invocation of Rye does not support the conclusion that "plurality" must mean more than three "gaps" or "pockets" to escape prior art.

Without reason to construe "plurality" other than in accordance with its ordinary meaning, this court notes that the district court \*1576 erred by unduly limiting the meaning of "plurality."

#### VI.

Based on its claim interpretation, the district court granted Custom Form's motion for a judgment of noninfringement. As noted in this opinion, however, the trial court erred in certain points of its interpretation with respect to claim 32. At this juncture, this court lacks sufficient findings of fact from the district court upon which to enter JMOL. Therefore, this court remands for revised findings on infringement in light of the proper claim construction.

#### *COSTS*

Each party shall bear its own costs.

*AFFIRMED IN PART, REVERSED and REMANDED IN PART.*

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847 F.2d 819  
56 USLW 2736, 6 U.S.P.Q.2d 2010  
(Cite as: 847 F.2d 819)

United States Court of Appeals,  
Federal Circuit.

ANDREW CORPORATION, Plaintiff-Appellant,  
v.  
GABRIEL ELECTRONICS, INC.,  
Defendant/Cross-Appellant.

Appeal Nos. 86-1689, 86-1690 and 87-1193.

May 25, 1988.

Appeal and cross appeal were taken from two judgments of the United States District Court for the District of Maine, Gene Carter, J., finding one patent invalid for indefiniteness, but infringed if valid, and holding another patent not infringed. The Court of Appeals, Pauline Newman, Circuit Judge held that: (1) a patent for improvements in a horn reflector microwave antenna was not invalid for indefiniteness, even if the applicant used words such as "approach each other," "close to," "substantially equal," and "closely approximate," and even if the applicant did not specifically delineate the point in which infringement started; (2) that patent was infringed under the doctrine of equivalents; and (3) the "isolation of the reflector assembly" language was a critical limitation on the competitor's patent claims and, therefore, that antenna was not literally infringed or infringed under the doctrine of equivalents by an antenna in which isolation did not exist.

Affirmed in part, reversed in part, and remanded.

Archer, Circuit Judge, filed a concurring opinion.

#### West Headnotes

#### [1] Patents ⚡99 291k99 Most Cited Cases

Patent for improvements in horn reflector microwave antenna was not rendered indefinite by use of terms such as "approach each other," "close to," "substantially equal," and "closely approximate," with reference to horizontal and vertical distribution of microwave energy outside main beam. 35 U.S.C.A. § 112.

#### [2] Patents ⚡99 291k99 Most Cited Cases

Claims for patent covering improvements in horn reflector microwave antenna were not fatally indefinite for failure to delineate specific point at which infringement would start and for failure of that point to correspond to unexpected change in properties. 35 U.S.C.A. § 112.

#### [3] Patents ⚡16.1 291k16.1 Most Cited Cases

Patentee may set metes and bounds of that which is sought to be patented, and it is not material whether phenomena just outside these claims limits are qualitatively different from that which is claimed; patentee is not required to show that some technological discontinuity exists between claimed invention and subject matter just outside the claims, but only that claimed subject matter would have been nonobvious in view of prior art. 35 U.S.C.A. § 103.

#### [4] Patents ⚡101(3) 291k101(3) Most Cited Cases

Law imposes no obligation on patent applicant to determine what is going on in technological gap between claimed invention and prior art, or to set claim limits at precise technological edge of invention. 35 U.S.C.A. § 103.

#### [5] Patents ⚡97 291k97 Most Cited Cases

Alleged infringer failed to prove by clear and convincing evidence that patent applicant withheld material references from patent examiner, for purposes of determining whether patent for the improvements in horn reflector microwave antenna was unenforceable for inequitable conduct.

#### [6] Patents ⚡314(1) 291k314(1) Most Cited Cases

To decline to decide issue of literal patent infringement when conflicting expert evidence appears to be counterbalancing, solely because subject matter is technically complex, would defeat party with burden of proof, without fair hearing.

#### [7] Patents ⚡168(2.1) 291k168(2.1) Most Cited Cases (Formerly 291k168(2))

Purpose of amendment of claim must be taken into account when considering prosecution history estoppel.

**[8] Patents ↪237**  
291k237 Most Cited Cases

Accused horn reflector microwave antennas functioned in substantially the same way, to achieve substantially the same result as claimed antennas and, therefore, accused antennas infringed claimed antennas under doctrine of equivalents.

**[9] Patents ↪234**  
291k234 Most Cited Cases

"Isolation of the reflector assembly" was critical limitation in patent claims for horn reflector microwave antenna and, therefore, accused antenna, in which neither isolation nor equivalent was present, did not infringe patent.

**Patents ↪328(2)**  
291k328(2) Most Cited Cases

3,305,870. Cited.

**Patents ↪328(2)**  
291k328(2) Most Cited Cases

3,550,142. Not infringed.

**Patents ↪328(2)**  
291k328(2) Most Cited Cases

4,410,892. Valid and infringed.

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Charles Pfund, Dike, Bronstein, Roberts, Cushman & Pfund, Boston, Mass., argued for defendant/cross-appellant. With him on the brief was Robert M. Asher.

Before FRIEDMAN, NEWMAN, and ARCHER, Circuit Judges.

PAULINE NEWMAN, Circuit Judge.

Andrew Corporation (Andrew) and Gabriel Electronics, Inc. (Gabriel) appeal and cross-appeal two final judgments of the United States District Court for the District of Maine. The court held [FN1] Andrew's U.S. Patent No. 4,410,892 (the Knop patent) invalid for

indefiniteness, but if valid infringed by Gabriel. The court's second judgment [FN2] held Gabriel's U.S. Patent No. 3,550,142 (the Dawson patent) not infringed by Andrew. We reverse the judgment of invalidity of the Knop patent and affirm the other aspects of both judgments.

FN1. Andrew Corp. v. Gabriel Electronics, Inc., No. 83-0372-P (D.Me. August 1, 1986).

FN2. Andrew Corp. v. Gabriel Electronics, Inc., 2 USPQ2d 1792 (D.Me.1987) [available on WESTLAW, 1987 WL 14966].

## Background

Both the Knop and the Dawson patents relate to improvements in horn reflector microwave antennas used in long distance telephone and data communication networks. As described by the district court, a horn reflector antenna generally is constructed of an inverted vertical "feed" cone and a horizontal cylinder, which intersect at right angles. The microwave beam enters the feed cone vertically from the apex of the cone; an angled paraboloidal reflector catches the unfocused beam as it rises, focuses it into a coherent beam, and reflects it out the horizontal cylinder and on to the next antenna in the network.

The performance of such antennas is evaluated using the standard criteria of "gain" and "pattern". "Gain" refers to the strength of the focused beam relative to the original unfocused beam; higher gain allows transmission over longer distances. "Pattern", or "Radiation Pattern Envelope" ("RPE"), refers to the distribution of microwave energy outside the main beam in what are referred to as "sidelobes".

These patterns are measured in both the horizontal ("E-plane") and the vertical ("H-plane") directions. Normally, the E-plane has more energy distributed outside the main beam. This is referred to as having "higher sidelobes" or "a wider pattern", and results in unwanted interference with nearby antennas. The overall performance of an antenna is measurable by the E-plane and H-plane patterns.

## THE KNOP PATENT

The Knop patent specification describes a horn reflector antenna that reduces interference \*821 with other antennas without significant loss of gain. This improved result is obtained by placing absorber

material deep inside the conical feed horn. The use of absorber material had been shown in the prior art, placed in the first few inches of the conical feed horn to dampen stray radiation. According to the prior art, placing absorber material deeper into the cone causes unsatisfactory loss of gain. Knop teaches that this deep absorber acts by reducing the width of the E-plane RPE without significantly affecting the quality of the H-plane RPE, thereby improving overall performance of the antenna.

Indefiniteness--35 U.S.C. § 112

A

[1] The district court held the Knop patent claims invalid, stating that terms in the claims such as "approach each other", "close to", "substantially equal", and "closely approximate", with reference to the E-plane and H-plane RPEs, were too vague to satisfy the requirement of definiteness stated in 35 U.S.C. § 112. [FN3] One or more of these terms appears in each of the claims, as illustrated in the following independent and dependent claims:

FN3. 35 U.S.C. § 112 ¶ 2: The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. A conical horn-reflector antenna comprising the combination of:

a paraboloidal reflector forming a paraboloidal reflecting surface for transmitting and receiving microwave energy,

a smooth-walled conical feed horn for guiding microwave energy from the focus of said paraboloidal reflecting surface to said reflector, and a lining of absorber material on the inside wall of the horn for reducing the width of the RPE in the E plane of the antenna without significantly increasing the width of the RPE in the H plane, said absorber increasing the Eigen value E and the spherical hybridicity factor Rs sufficiently to cause the E plane and H plane RPEs to approach each other.

3. A conical horn-reflector antenna as set forth in claim 2 which produces *substantially equal* E and H plane illumination patterns.

6. A method as set forth in claim 5 wherein said lining of absorber material increases the taper of the field distribution along the radii of said horn in the E plane to *closely approximate* the taper of the field distribution along the radii of said horn in the H plane. [emphases added]

The criticized words are ubiquitous in patent claims.

Such usages, when serving reasonably to describe the claimed subject matter to those of skill in the field of the invention, and to distinguish the claimed subject matter from the prior art, have been accepted in patent examination and upheld by the courts. As this court put it in Rosemount, Inc. v. Beckman Instruments, Inc., 727 F.2d 1540, 1546-47, 221 USPQ 1, 7 (Fed.Cir.1984):

Beckman attacks the claims as indefinite, primarily because "close proximity" is not specifically or precisely defined. As stated in the district court's Memorandum Decision, "to accept Beckman's contention would turn the construction of a patent into a mere semantic quibble that serves no useful purpose."

In Rosemount the district court found that "'close proximity' is as precise as the subject matter permits". Id. In Seattle Box Co. v. Industrial Crating & Packing, 731 F.2d 818, 826, 221 USPQ 568, 573-74 (Fed.Cir.1984) (citing W.L. Gore & Associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 1557, 220 USPQ 303, 316 (Fed.Cir.1983), *cert. denied*, 469 U.S. 851, 105 S.Ct. 172, 83 L.Ed.2d 107 (1984)), the court remarked that "substantially equal" is a term of degree, and that its acceptability depends on "whether one of ordinary skill in the art would understand what is claimed ... in light of the specification", even if experimentation may be needed.

In W.L. Gore & Associates, Inc. v. Garlock, Inc., No. 87-1296, 842 F.2d 1275, 1280, 6 USPQ2d 1277, 1282 (Fed.Cir.1988), this court stated that an "imprecise claim \*822 limitation, such as the phrase 'about 100% per second' " does not impart invalidity to the claims, but is to be considered in determination of infringement. See also Hvibritech Inc. v. Monoclonal Antibodies, Inc., 802 F.2d 1367, 1385, 231 USPQ 81, 95 (Fed.Cir.1986) ("the claims, read in light of the specification, reasonably apprise those skilled in the art and are as precise as the subject matter permits. As a matter of law, no court can demand more"), *cert. denied*, — U.S. —, 107 S.Ct. 1606, 94 L.Ed.2d 792 (1987); Shatterproof Glass Corp. v. Libbey-Owens Ford Co., 758 F.2d 613, 624, 225 USPQ 634, 641 (Fed.Cir.), *cert. dismissed*, 474 U.S. 976, 106 S.Ct. 340, 88 L.Ed.2d 326 (1985):

"If the claims, read in the light of the specification, reasonably apprise those skilled in the art both of the utilization and scope of the invention, and if the language is as precise as the subject matter permits, the courts can demand no more."

(quoting Georgia-Pacific Corp. v. United States Plywood Corp., 258 F.2d 124, 136, 118 USPQ 122, 132 (2d Cir.), *cert. denied*, 358 U.S. 884, 79 S.Ct. 124, 3 L.Ed.2d 112 (1958)).

The Manual of Patent Examining Procedure instructs examiners in a similar vein. See MPEP § 706.03(d):

[An examiner] should allow claims which define the patentable novelty with a *reasonable* degree of particularity and distinctness. Some latitude in the manner of expression and the aptness of terms should be permitted even though the claim language is not as precise as the examiner might desire. [emphasis in original]

Andrew asserted that the Knop claims could not reasonably be expressed more precisely; and indeed the court found that it "became very clear during trial ... that curves showing RPEs for horn antennas will never be identical". Words similar to those used in the Knop claims appear in prior art patents that were of record in the district court, dealing with similar technology. For example, claim 1 of U.S. Patent No. 3,305,870 to Webb describes a "radiation pattern whose magnitudes in both the E and H planes are substantially equal".

Neither the record nor the law supports Gabriel's position that one of ordinary skill in the art would not know when the RPEs were "substantially equal" or "closely approximate". The district court's ruling is contrary to authority, and the holding of invalidity on this ground is reversed.

## B

[2] The district court observed that the RPEs change gradually with increased depth of absorber in the cone.

The court held that the claims must specifically delineate the point at which infringement starts, and that if such point does not correspond to an unexpected change in properties, the claims are fatally flawed under 35 U.S.C. § 112. The court said:

There is no unexpected change in the E-plane at any of the levels of absorber which gives a clue to what is intended by the patent claims. The choice of a point beyond which there is infringement, therefore, is arbitrary and the point unforeseeable. [footnote omitted]

The district court held that the outer limit of the claim scope must coincide precisely with the point at which the claimed invention comes into scientific being. The court referred to *Brown-Bridge Mills, Inc. v. Eastern Fine Paper, Inc.*, 700 F.2d 759, 763, 217 USPO 651, 655 (1st Cir.1983), which quoted with approval the holding originating in *Kwik-Set, Inc. v. Welch Grape Juice Co.*, 86 F.2d 945, 947, 32 USPO 104, 106 (2d Cir.1936) that "It is only where the selected [i.e., claimed] point corresponds with the physical phenomenon and the patentee has discovered the point at which that physical phenomenon occurs that the maintenance of a patent monopoly is admissible."

This erroneous theory would prevent a patentee from obtaining claims that do not coincide with, or claim less than, the exact point at which a change in the physical phenomenon occurs; it would require the patentee always to discover that point, no matter how prolonged or expensive the additional research; and would bar patent \*823 protection when the change is by nature gradual or incremental at its transition, whether or not it is unobvious in view of the prior art.

Patentability is not measured against the closest point on the road to invention. Much technological change that meets the criterion of unobviousness, when viewed in light of the prior art, has a fuzzy boundary at its point of origin. Technological differences from prior art usually become more pronounced with distance from the boundary, but the changes may become manifest gradually. Indeed, the location of the boundary may well change with the available precision of measurement.

[3] It is the prior public knowledge--the "prior art"--by which patentability is tested. A patentee may set the metes and bounds of that which is sought to be patented, and it is not material whether the phenomena just outside these claim limits are qualitatively different from that which is claimed. The patentee is not required to show that some technological discontinuity exists between the claimed invention and the subject matter just outside the claims, but only that the claimed subject matter would have been nonobvious in view of the prior art. 35 U.S.C. § 103.

[4] The law imposes no obligation on a patent applicant to determine what is going on in the technological gap between the claimed invention and the prior art, or to set the claim limits at the precise technological edge of the invention. A claim is not fatally indefinite for failing specifically to delineate the point at which the change in physical phenomenon occurs. See, for example, the extensive body of case law holding that a patentee may claim less than the entire invention:

Nothing is better settled in the law of patents than that the patentee may claim the whole or only a part of his invention, and that if he only describe and claim a part, he is presumed to have abandoned the residue to the public.

*McClain v. Ortmaier*, 141 U.S. 419, 423-24, 12 S.Ct. 76, 77, 35 L.Ed. 800. (1891).

To the extent that *Brown-Bridge* may be read as holding, as the district court appears to have believed, that a claim is invalid unless it sets as a limitation the exact technological border of the invention, we expressly reject that holding. [FN4] The district court's

judgment of invalidity on this ground is reversed.

FN4. The case authorities relied on in *Brown-Bridge v. Kwik-Set* and *Helene Curtis Indus. v. Sales Affiliates*, 233 F.2d 148, 154, 109 USPQ 159, 163-64 (2d Cir.1956), do not support the application that the district court gave them. In both *Kwik-Set* and *Helene Curtis* the claim limitation fell in the midst of the prior art; for instance the claim in *Helene Curtis* was to an optimum range of a chemical property where the chemical was already known to have that property. *See also Dow Co. v. Halliburton Co.*, 324 U.S. 320, 65 S.Ct. 647, 89 L.Ed. 973 (1945), which held on similar facts that the claimed range must be proved critical in order to show "invention". These cases were all concerned with showing "invention" in light of prior art, rather than the § 112 issues here involved.

#### Obviousness and Enablement

Gabriel appeals the district court's judgment that the Knop patent had not been proved invalid for obviousness, 35 U.S.C. § 103, or for lack of enablement, § 112. We have considered all of the arguments on both sides, and conclude that the court did not err in holding that the presumption of validity concerning these issues had not been overcome by clear and convincing evidence. *See Hybritech Inc.*, 802 F.2d at 1375, 231 USPQ at 87 ("the presumption of validity goes to validity of the patent in relation to the patent statute as a whole, not just to non-obviousness") (emphasis in original).

#### Inequitable Conduct

[5] Gabriel asserted that Knop withheld material references from the patent examiner, thereby rendering the patent unenforceable for inequitable conduct. The district court determined that a European patent application which was disclosed to the patent examiner in a Rule 312 amendment, 37 C.F.R. § 1.312, was reasonably timely disclosed and was not material to the prosecution of the Knop patent. The court also found that a horn antenna that was in the \*824 applicant's possession was "disclosed generically in the patent application" and that there was no intent to withhold this information. None of these findings has been shown to be clearly erroneous. Both materiality and intent to withhold must be shown, before these elements can be balanced in determining whether the applicant was guilty of inequitable conduct in patent prosecution.

*J.P. Stevens & Co. v. Lex-Tex Ltd.*, 747 F.2d 1553, 1560, 223 USPQ 1089, 1092 (Fed.Cir.1984), cert. denied, 474 U.S. 822, 106 S.Ct. 73, 88 L.Ed.2d 60 (1985).

We affirm the district court's conclusion that inequitable conduct has not been proved by clear and convincing evidence.

#### Infringement of the Knop Patent

Andrew asserted infringement of Knop claims 1, 2, 3, 5, and 6 by the Gabriel antenna, either literally or in terms of the doctrine of equivalents. The district court first considered Andrew's assertion of literal infringement.

Construing the claims in light of the prosecution history, the court concluded that the final phrase of all the independent claims

said absorber increasing the Eigen value E and the spherical hybridicity factor Rs sufficiently to cause the E plane and H plane RPEs to approach each other was a material limitation because it was added during prosecution. The court heard testimony on whether the absorber in the accused Gabriel antenna achieved this result. Two experts testified, one called by Gabriel and one by Andrew, taking contrary positions on this issue. The district court found both experts to be "competent" and "credible". The court stated that it could not decide between the opposing positions of the experts concerning the Eigen value and the spherical hybridicity, and that "the court has no basis for accepting either proposition over the other". The court thus concluded that the evidence was "in equipoise", and therefore that the plaintiff had not met its burden of proving infringement by preponderant evidence.

A true equipoise of evidence may indeed defeat the party with the burden of proof, *see Aero Spacelines, Inc. v. United States*, 530 F.2d 324, 332, 208 Ct.Cl. 704 (1976); *see also Wilson v. Omaha Indian Tribe*, 442 U.S. 653, 669, 99 S.Ct. 2529, 2538, 61 L.Ed.2d 153 (1979), but there is no authority for holding evidence to be in equipoise for the sole reason that the court could not decide between conflicting experts. We agree with the statement in *United States v. General Motors Corp.*, 561 F.2d 923, 933 (D.C.Cir.1977), cert. denied, 434 U.S. 1033, 98 S.Ct. 765, 54 L.Ed.2d 780 (1978):

The mere fact that experts disagree does not mean that the party with the burden of proof loses. The finder of fact has to make the effort to decide which side has the stronger case. This can be based on the demeanor of the witnesses (if so, the trial judge should say so) or the intellectual strength of the evidence and arguments based thereon.

[6] Given the complexity of modern technology, it may well happen that qualified experts will appear on both sides, that their testimony will conflict, and that the testimony or the technology or both of them will be difficult to understand. However, to decline to decide the issue when conflicting evidence appears to be counterbalancing solely because the subject matter is technically complex, will defeat the party with the burden of proof without fair hearing.

Such treatment would remove complex technological issues from the purview of justice; this can not reflect the correct judicial response to a world increasingly bound to technology. Thus we do not endorse in principle the district court's treatment of literal infringement. In this case, however, the issue of infringement was adequately resolved by the court's analysis in terms of the doctrine of equivalents.

The district court found that Gabriel's antenna infringed the Knop patent under the doctrine of equivalents, applying the classical analysis of Graver Tank & Mfg. Co. v. Linde Air Products Co., 339 U.S. 605, 70 S.Ct. 854, 94 L.Ed. 1097, 85 USPQ 328 (1950). The court stated, "From exhibits produced at trial, and without necessarily understanding the mathematical explanation, \*825 the Court can see that both the [accused device and] Andrew's embodiment of the patent function in the same way." The court thus found that although it did not know the precise changes in the Eigen value and spherical hybridicity factors of the final clause of claim 1, equivalency had been established based on the similarities in structure and RPEs of the accused antenna and the patented antenna, which showed that the two antennas achieved the same results by the same means in the same way. Thus, although the court had found that the evidence as to the subject matter of the final phrase of the claim was inconclusive, the court stated:

At trial, the Court was thoroughly persuaded that for all practical purposes the [accused device] produced virtually the same patterns as those produced by the [patented device].

The court concluded that

by use of the same means, the [accused device] produces the same results in the same way as the invention described by the Knop patent.

The court, applying the doctrine of equivalents to the accused device in light of the claimed invention viewed as a whole, held that the accused device was within the ambit of the claim, despite the absence of preponderant evidence as to the final phrase when analyzed in isolation from the rest of the claim.

Gabriel argues that the doctrine of prosecution history

estoppel requires that the limitation of the final claim phrase be affirmatively found in the accused device, and that it can not be inferred based on similarities in structure, way, and result. Gabriel argues that since the district court held itself incapable of finding this fact, infringement can not be found, even under the doctrine of equivalents.

The district court had held, responding to this argument by referring to the prosecution history, that "it seems more appropriate to characterize the [addition during examination of the final claim phrase] as a clarification of the function of the absorber in the cone". The court concluded that "where the amendments were made for the purposes of explication and clarity, the Court does not think it appropriate to invoke estoppel against the application of the doctrine of equivalents."

[7] The purpose of an amendment must be taken into account when considering prosecution history estoppel. Hughes Aircraft Co. v. United States, 717 F.2d 1351, 1363, 219 USPQ 473, 481 (Fed.Cir.1983) ("Depending on the nature and purpose of an amendment, it may have a limiting effect within a spectrum ranging from great to small to zero"). See also Moeller v. Ionetics, Inc., 794 F.2d 653, 659-60, 229 USPQ 992, 996-97 (Fed.Cir.1986) (amendment was not intended to limit, but "to 'particularly point out' the invention", quoting the examiner).

[8] We agree with the district court's determination that this amendment to the Knop claims did not bar application of the doctrine of equivalents. Relying on the totality of similarities between the accused device and the claimed structure, including the similarities in the RPEs that are referred to in the final phrase of the claims, the district court found that the accused antennas perform the same function in substantially the same way to achieve substantially the same result as the claimed device. No clear error having been shown, the district court's finding of infringement is affirmed.

#### THE DAWSON PATENT

[9] The court held that Gabriel's Dawson patent for a horn reflector microwave antenna was not literally infringed by the Andrew antenna since the claimed isolation of the reflector assembly was not literally present. Andrew Corp. v. Gabriel Electronics, Inc., 2 USPQ2d 1792, 1793-94 (D.Me.1987) [available on WESTLAW, 1987 WL 149666]. The court also held that the patent was not infringed under the doctrine of equivalents.

It was not contested that the "isolation of the reflector assembly" is a critical limitation in the Dawson patent

claims. The accused Andrew device was tested to determine if isolation existed. The court reviewed \*826 these tests and the accompanying testimony, and held that neither isolation nor an equivalent was present. We discern no clear error in the court's analysis and reasoning, and affirm its decision of noninfringement of the Dawson patent.

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#### Summary

The court's judgment of invalidity of the Knop patent due to claim indefiniteness is reversed. The holding of validity on all other grounds is affirmed.

The judgment that the Gabriel antenna infringes the Knop patent is affirmed; the matter is remanded for determination of damages.

The judgment of non-infringement of the Dawson patent is affirmed.

#### Costs

Costs in appeal and cross-appeal in favor of Andrew Corporation, the prevailing party.

**AFFIRMED IN PART, REVERSED IN PART, AND REMANDED.**

ARCHER, Circuit Judge, concurring.

I join the majority opinion, except for the section headed "Infringement of the Knop Patent." With regard to infringement of the Knop patent, there is no need to consider literal infringement because, as the majority determines, the district court did not clearly err in finding that the Gabriel antenna infringes the Knop patent under the doctrine of equivalents.

I would, nonetheless, add that the district court's determination that Andrew had failed to carry its burden of proving literal infringement by preponderant evidence was not improper in my view, albeit probably unnecessary in view of its finding of infringement under the doctrine of equivalents. I also consider unwarranted the majority's criticism of the district court for finding the evidence on literal infringement to be in "equipoise" where, according to the district court, the critical "evidence of the opposing experts was directly contradictory" and presented "no basis for accepting either proposition over the other."

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